

We have reviewed the draft figure provided by ERG to support its background determinations for the Hecla - Johnny M mine site. In general, the results seem reasonable and may be acceptable as background values for use on the site. However, in order to make a definite determination, we will require more complete documentation of the process used and the raw data acquired at this background location. From section 2.1.2 and 2.2 of the Site Assessment Plan, and the draft diagram that was provided, it appears that GPS-linked gamma detectors were used to collect that data in counts per minute (CPM) for the background determination and that a correlation study was performed to provide the factors used to convert the CPM measurements into $\mu\text{R/hr}$ values. If this interpretation is incorrect, please provide details that will adjust our understanding of your process. **This is correct.**

The background determination is a significant factor in establishing the cleanup criteria for the site, and we will make a thorough evaluation of it before we concur with the project approach. We are requesting the following additional information so that we might have a more complete understanding of the basis for the background determination that you provided.

1. Documentation of the correlation study performed between the HPIC and the gamma detector, including locations of measurement points, data collected from both instruments, dates of the measurements, and area conditions at the time of the measurements. **All of this (except area conditions) are included in the attached spreadsheet "Johnny M Mine HPIC data 9-15-12" and attached .pdf HPIC Locations – 100412. The area conditions on 9/15/12 were scattered late afternoon showers but site/ground conditions were dry during the performance of the correlation.**
2. A brief description of the calculation process or determination of the linear regression equation that defines the conversion of CPM to $\mu\text{R/hr}$. **Correlation measurements were made at ten locations on site, using both a Ludlum Model 2221/Model 44-10 detector and a GE Energy RS 131 HPIC. The Model 2221/Model 44-10 detector readings consisted of 1-minute scaler counts with the detector held at 18-inches above ground surface (same geometry as used in overall site survey). The readings for HPIC are an average of approximately 3 to 5 minutes of exposure rate measurements made with the HPIC at 1-meter above ground surface. The resulting measurements were compared and plotted, and a regression line with equation output by MS Excel. The regression line equation was then used to convert all gamma survey count rates to exposure rates. The equation used was: $Y = 0.0005X + 7.7174$, where Y is the exposure rate in $\mu\text{R/hr}$ and X is the gamma count rate in cpm.**
3. Data files or a comprehensive summary of the raw data from the gamma surveys that are represented by the colored lines on the draft figure that was provided. We would like to segregate the raw data in ways that will show the variability of the gamma count rates over the monitoring pathways. It is important to note that some of the Johnny M ore body is located near this background location, there is an underground drift in the mine that traverses this background location, and a vent shaft a short distance away and located SE of the background location. Although the mine workings are deep underground we will verify the absence of any artificially elevated gamma count rates by seeing the raw gamma data. **The raw gamma survey**

data is attached in the MS Excel spreadsheet Proposed Background Area Gamma Data.xlsx. The coordinate system used is NAD83 State Plane New Mexico West, units: feet.

4. Other data that you may have acquired in the proposed background reference area, or as part of the correlation measurements, such as to soil concentrations that may be used to correlate those data to gamma measurements during site surveys, cleanup activities, or final status surveys. We have no soil data at this time to compare to. Soil sampling efforts are on hold until EPA concurs that ERG can proceed with soil sampling efforts on October 8th, 2012.